

Message

From: Donna Huff [donna.huff@tceq.texas.gov]
Sent: 5/31/2019 9:02:55 PM
To: Robinson, Jeffrey [Robinson.Jeffrey@epa.gov]
Subject: RE: Potential Ozone Exceptional Events in the Houston Area

Jeff,

Thanks for the email. I'll reach out to you later next week. Have a great weekend and good luck with the move.

Donna

Donna F. Huff, Director
Air Quality Division
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From: Robinson, Jeffrey <Robinson.Jeffrey@epa.gov>
Sent: Friday, May 31, 2019 11:12 AM
To: Donna Huff <donna.huff@tceq.texas.gov>
Subject: Potential Ozone Exceptional Events in the Houston Area

Donna,

Hope things are going well today. This is the email I mentioned in my voicemail to you earlier today.

EPA Region 6 has conducted an initial review of information presented in TCEQ's April 2, 2019 TCEQ Power Point slides relating to the March 26, 2019 initial notification of potential ozone exceptional events in the Houston area on July 26-27 and August 23-24, 2018. Specifically, we compared the enhancement and the concentrations reached at the urban sites to a background site, including a review of trajectories, satellite observations, and meteorological conditions. We understand that you are working on a more robust assessment of the available information for these subjects and wish to provide our preliminary concerns at this earlier stage.

Our preliminary review of the information presented in your slides does not currently appear to support the hypothesis that wildfire exceptional events caused the ozone exceedances at the Houston Aldine and Bayland Park monitoring sites.

- Comparing the urban sites to a background site: On July 27, 2018, the upwind ozone concentrations at the nearby Alabama-Coushatta regional ozone site reached a maximum 8-hour ozone concentration of 59 ppb, an increase of 6 ppb from the previous day. On the same day the Houston Aldine site reached 109 ppb 8-hour maximum ozone concentration, an increase of 34 ppb from July 26. Similarly, on August 24, 2018 Alabama-Coushatta reached a maximum 8-hour ozone concentration of 55 ppb, an increase of 7 ppb from the previous day, while the Houston Aldine site reached 91 ppb, an increase of 14 ppb from August 23, 2018.

Some of the trajectory, satellite observation and meteorological data measurements do not appear to support wildfires as causing the 8-hour ozone exceedances.

- Trajectories: The wind back-trajectories do not seem to show a clear overlap with forward trajectories from any major wildfires in the U.S. In addition, the back trajectories presented transit areas with low to moderate 8-hour ozone concentrations rather than areas with high concentrations.

- Satellite Observations: Satellite observations did not seem to show smoke over the Houston area on the ozone exceedance days. Aerosol optical depth (AOD) by itself does not provide proof of a wildfire signature since the measurements may include non-wildfire dust and fine salt small particles or other chemicals and compounds. Further, the satellite column nitrogen dioxide (NO₂) data does not seem to show a significant transport of NO₂ from outside of the Houston area leading up to the ozone exceedance days.
- Meteorological: We note that all four exceedance days were very stagnant, with many hourly resultant surface wind speeds at or below 4 mph. Such stagnation commonly results in 8-hour ozone concentrations being primarily influenced by local ozone precursor emissions (VOC and NO_x) from the immediate Houston area.

Since TCEQ has started to develop photochemical modeling to assess non-typical wildfire impacts on the episodes and if these impacts might support an EE demonstration, we wanted to give you our initial feedback. We also understand that Dr. Jaffe is working on a regression model of these days in support of a potential EE demonstration. Our initial observations are provided so the TCEQ understands our analysis of the available monitoring and satellite data contraindicate a non-typical wildfire cause for these exceedance days. Should the photochemical modeling and Dr. Jaffe's analysis conclude that the exceedances were potentially caused by non-typical wildfire emissions, the monitoring data and satellite data would also need to support a similar conclusion. Please be mindful that should the impacts predicted by the photochemical modeling and/or Dr. Jaffe's analysis estimate the impact of non-typical wildfire emissions to be much higher than the monitoring and satellite data currently indicates, the EE package will likely draw more analysis and skepticism, and the chance of approvability could be diminished.

We raise these initial observations since we believe the demonstration required to prove an exceptional event in these cases will be a high bar with respect to showing a wildfire cause. Given the magnitude of the exceedances on two of the four days (34 ppb and 16 ppb above 75 ppb standard), we want to communicate that this is a very large amount of ozone to attribute to wildfires that are mostly over 1000 miles away and that it will take a very substantial amount of evidence, including monitoring and satellite data, to support a successful EE demonstration in these cases.

Jeff Robinson, Branch Chief
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